THE EFFECTIVENESS OF TEAMS GAMES TOURNAMENT (TGT) LEARNING MODEL TOWARD STUDENTS MATHEMATICS LEARNING OUTCOMES OF CLASS VIII AT SMP N 2 TEMPEL SLEMAN REGENCY

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ABSTRACT

The research is done based on the observation that the learning process is still focused on teacher-centered so that students are less active in the learning process and the result is low. The objective of the study is to know the effectiveness of the Teams Games Tournament with a live learning model toward student's mathematics learning outcomes of class VIII at SMP N 2 Tempel sleman regency of odd semester in academic year 2016/2017. This research uses postest-only design. The population of this research is the student of class VIII SMP Negeri 2 Tempel academic year of 2016/2017, which consists of 157 students which is divided into five classes. The sample is taken by 2 classes with a random sampling technique using a lottery, it is delivered by class VIII D as an experiment class and class VIII B as the control class. The collecting data technique uses test. The instrument of collecting data uses the student's study result. The instrument test of collecting data uses validity, distinguishing capacity and reliability test. The technique of data analysis includes a normal test, homogeny test, then hypothesis test t. The result of the study on significant level α = 5% with df = 59 shows that: (1) there are some differences in the result of Mathematic study between the student which use learning model Teams Games Tournament than the student which use live learning model. It can be seen that t_{count} = 2,6332 and t_{table} = 2,00134 get $t_{count} > t_{table}$. (2) mathematic learning uses learning model Teams Games Tournament is more effective than *a* live learning model toward the result of Mathematic learning. The result shows that t_{count} = 2,6332 and t_{table} = 1,6713 get $t_{count} > t_{table}$.

Keywords: Effectiveness, Teams Games Tournament, Study result.

INTRODUCTION

The progress of a nation can be seen from the quality of its education. The quality of education requires human resources as a basic factor to achieve the welfare of a nation and state. By maximizing the quality of human resources and good education, maximum results will be created as well. Education is a need that must be fulfilled throughout life. Without education, it is absolutely impossible for a group of people to live in line with their aspirations to become an advanced, prosperous and happy nation according to their concept of life. Education will be meaningful if in the learning process considering student development. Good teaching and learning interaction is the teacher as a teacher does not dominate the activity, but helps create conducive conditions and provides motivation and guidance so students can develop their potential and creativity through learning activities. Teaching and learning activities in schools become one of the educational activities to guide students towards better conditions.

Based on the results of an interview with Mrs. Andriyani Sapto Rahayu, S.Pd, a VII grade mathematics teacher at SMP Negeri 2 Tempel on March 14, 2016, information was obtained that the learning model used was still using the direct learning model that is a teacher-centered learning model. When learning takes place most students are less actively involved in participating in learning mathematics and student dependence on teachers is still high. When given a question exercise, not all students do it seriously. This will affect student learning outcomes in school mathematics.

Based on the results of interviews with several students of SMP Negeri 2 Tempel on March 14, 2016, information was obtained that some students still had difficulties in learning mathematics and considered mathematics as a harder subject than other subjects. Students do not dare to ask the teacher if students have difficulty in understanding the material presented. Besides, that students consider mathematics difficult because mathematics has many formulas.

The results of the end of the even semester 2015/2016 academic year on mathematics, showed that the average grade of mathematics in VII grade students of SMP Negeri 2 Tempel was still below the minimum expected completeness criteria and was set at 75. One that affected students' mathematics learning outcomes is related to the learning model used by the teacher in the learning process. The use of learning models that are used still tends to be teacher-centered, thus making students less actively involved in the learning process. Inappropriate learning model makes students not understand the material that has been delivered by the teacher. The learning model chosen by the teacher should be a learning model that attracts attention to be more active in learning. Therefore, learning mathematics requires a learning model that can encourage students to be actively involved, enthusiastic, and creative in learning. One of them is by using the Teams Games Tournament (TGT) learning model.

Based on the description in the background of the problem above, it can be identified that some of the problems are that most students are less actively involved in participating in learning mathematics. In learning in the classroom students' dependence on teachers is still high. The learning model used tends to be teacher-centered. Most students still experience difficulties in learning mathematics. Student mathematics learning outcomes are still low.

Given the limited time, funds and capabilities of the researchers, as well as avoiding the breadth of existing problems, this research is only limited to the TGT learning model on the subject of factoring in algebraic forms and mathematics learning outcomes of VIII grade students of SMP Negeri 2 Tempel odd semester.

The problem in this study is whether there is a significant difference between the learning outcomes of mathematics using the TGT learning model and the direct learning model of the mathematics learning outcomes of eighth-grade students of SMP Negeri 2 Tempel Sleman Regency in the odd semester of the 2016/2017 school year. Which is more effective between the TGT learning model and the direct learning model towards the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Tempel Sleman Regency in the odd semester of the 2016/2017 school year ?.

The purpose of this study was to determine whether or not there were significant differences between mathematics learning outcomes using the TGT learning model and direct learning models to mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year. To find out which is more effective between the TGT learning model and the direct learning model towards the mathematics learning outcomes of VIII grade students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year.

Mathematics is a subject that has material interrelated with further material. So in learning mathematics must understand the material well before continuing the material, as revealed by Slameto (2010: 2) that learning is a process carried out by a person to obtain a change in new behavior as a whole, as a result of his own experience in the interaction of his environment". According to Suprijono, Agus (2015: 5) learning outcomes are patterns of actions, values, understandings, attitudes, appreciation, and skills."

The cooperative learning model is a learning model that is carried out in groups. According to Slavin in Isjoni (2010: 15) cooperative learning is a learning model where students learn and work in small groups collaboratively with members of 4-6 people with heterogeneous group structures.

Teams Games Tournament (TGT) is one of the types or models of cooperative learning that is easy to apply, involves the activities of all students without any difference in status, involves the role of students as peer tutors and contains elements of play and reinforcement. According to Shoimin, Aris (2014: 203) TGT consists of five main components namely the presentation of classes, groups (teams), games (games), matches (tournaments) and group awards (team recognition). Following are the TGT steps that the researchers did: 1) The teacher conveys the learning objectives, subject matter, and a brief explanation of the worksheets that are distributed. 2) The teacher divides the class into heterogeneous groups. 3) The teacher asks students to discuss the worksheet with the group and present it. 4) The teacher gives a game that consists of questions that are relevant to the material. 5) The teacher gives the

tournament questions at the end of the meeting week. 6) The teacher gives appreciation to the group that gets high points.

METHODS

This type of research uses a form of experimental design with a posttest only control design (Sugiyono, 2012: 112). In this study using two classes, namely the experimental class, and the control class. In the experimental class, learning is carried out using the TGT learning model in the control class learning is carried out using the direct learning model.

This research was conducted at SMP Negeri 2 Tempel in the odd semester of the 2016/2017 school year with the subject of factoring in algebraic form. The time for conducting the research was from August 5 - August 20, 2016. The population in this study were all eighth-grade students of SMP Negeri 2 Pasteur 2016/2017 Academic Year consisting of 5 classes, namely VIII A, VIII B, VIII C, VIII D, and VIII E, totaling 157 students. Sampling is done by a random sampling technique, which is taking sample classes by lottery class. After drawing the population consisting of 5 classes, two classes were obtained, namely class VIII D as the experimental class and class VIII B as the control class.

The variables used in this study include two variables, namely learning models and mathematics learning outcomes. The learning model consists of the TGT learning model in the experimental class and the direct learning model in the control class.

Data collection techniques in this study were carried out using test techniques in the form of learning outcomes and observation tests. In this study, the test was given to the experimental class and the control class after being given different treatments as learning outcomes. Observation is used to obtain data about teacher achievement in the treatment. Data collection instruments used were test questions and observation guidelines. Mathematics learning test results in the form of multiple-choice questions with four alternative answers, namely A, B, C, and D, each of which consists of 1 correct answer and 3 deceptive answers. Correct answers are given a score of 1 and incorrect answers are given a score of 0. The total number of items is 25 items. The processing time is 75 minutes. Lattice of test questions that are tested include aspects of knowledge C_1, aspects of understanding C_2, and aspects of application C_3.In this study, the observation guide only points to the activities that will be observed. Observation sheet implementation of learning activities to determine the implementation of the learning process in accordance with the steps of the learning model used, namely the TGT learning model and the direct learning model.

In this study to obtain accurate data, the researcher must use good instruments and be able to retrieve information from the object being studied. The instrument trials were conducted to obtain the validity of the instrument (validity), instrument reliability (reliability) and distinguishing power so that it could be used as an instrument for data collection and research.

The data analysis technique used is the test technique with the instrument in the form of objective questions in the form of multiple choice. The analysis prerequisite test is the Chi-square formula normality test and the homogeneity test uses Bartlett. Research hypothesis testing uses two-party hypothesis testing and one-party hypothesis. Hypothesis testing of two parties using a t-test was conducted to find out whether there was a significant difference between student mathematics learning outcomes using the TGT learning model and those using the direct learning model. While the one-party hypothesis test using t-test was conducted to find out which is more effective between the TGT learning model and the direct learning model.

RESULTS

1. **Initial Ability**

The summary of the results of the initial ability normality test can be seen in Table 1.

Table 1**.** Summary of the Normality Test Results Initial Capability

Class	χ^2_{count}	χ^2_{table}
Experiment	0,2016	5,9915
Control	4,7341	7,8147

From the normality test at a significant level of 5% and degrees of freedom = 2, it can be seen that $\chi^2_{count} = 0{,}2016$ and $\chi^2_{table} = 5{,}9915$ so $\chi^2_{count} < \chi^2_{table}$ which means that the experimental class has initial ability data that is normally distributed. While the normality test at a significant level of 5% and the degree of freedom = 3, it can be seen that $\chi^2_{count} = 4{,}7341$ and $\chi^2_{table} = 7{,}8147$ so $\chi^2_{count} < \chi^2_{table}$ which means the control class has the initial capability data that is normally distributed.

The summary of the results of the initial ability homogeneity test can be seen in Table 2.

Table 2. Summary of Homogeneity Test Results Initial Ability Score

χ^2_{count}	χ^2_{table}
2,112	3,8415

From the homogeneous test at a 5% significance level and the degree of freedom = 1, it can be seen that χ^2_{count}= 2,112 and $\chi^2_{table} = 3{,}8415$ so that $\chi^2_{count} < \chi^2_{table}$ From the homogeneous test at a 5% significance level and the degree of freedom = 1, it can be seen that.

The summary of the results of the two-party hypothesis testing initial capability data can be seen in Table 3.

Table 3. Summary of Hypothesis Test Results of Two Parties Initial Capability Score

t_{count}	t_{tabel}
0,3947	2,00134

From the two-party hypothesis test at a significant level of 5% and degrees of freedom = 59, it can be seen that $t_{count} = 0{,}3947$ and $t_{table} = 2{,}00134$ so that $t_{count} < t_{table}$ which means there is no difference in the initial ability between the experimental class and the control class of class VII students for the even semester of SMP Negeri 2 Tempel in the 2016/2017 school year.

2. Mathematics Learning Outcomes

The summary of the normality of mathematics learning outcomes can be seen in Table 4.

Table 4. Summary of Normality Test Results Mathematics Learning Outcomes

Class	Class	χ^2_{count}	χ^2_{table}
Experiment	Experiment	0,6448	7,8147
Control	Control	0,8184	7,8147

From the normality test at a significant level of 5% and degrees of freedom = 3, it can be seen that $\chi^2_{count} = 0{,}6448$ and $\chi^2_{table} = 7{,}8147$ so that $\chi^2_{count} < \chi^2_{table}$ which means that the experimental class has mathematical learning outcomes data that are normally distributed. While the normality test is at a significant level of 5% and the degree of freedom = 3, it can be seen that $\chi^2_{count} = 0{,}8184$ and $\chi^2_{table} = 7{,}8147$ so that $\chi^2_{count} < \chi^2_{table}$ which means that the control class has mathematical learning outcomes data that are normally distributed.

The summary of the results of the initial ability homogeneity test can be seen in Table 5.

Table 5. Summary of Homogeneity Test Results Mathematics Learning Outcomes

χ^2_{count}	χ^2_{table}
0,127	3.8415

From the homogeneous test at a 5% significance level and the degree of freedom = 1, it can be seen that $\chi^2_{count} = 0{,}127$ and $\chi^2_{table} = 3{,}8415$ so that $\chi^2_{count} < \chi^2_{table}$ which means that the learning outcomes of both classes have the same variance (homogeneous).

The summary of the results of the two-party hypothesis test data on the value of mathematics learning outcomes can be seen in Table 6.

Table 6. Summary of Hypothesis Test Results of Two Parties Learning Outcomes Value

t_{count}	t_{table}
2,6332	2,00134

From the first hypothesis test at a significant level of 5% and degrees of freedom = 59, it can be seen that $t_{count} = 2{,}6332$ and $t_{table} = 2{,}00134$ so that $t_{count} > t_{table}$ y which means that there are differences in mathematics learning outcomes between students whose learning uses the Teams Games Tournament learning model and students who use the direct learning model in class VIII students in the even semester of SMP Negeri 2 Tempel in the 2016/2017 school year.

The summary of the results of one-party hypothesis test data on the value of mathematics learning outcomes can be seen in Table 7.

Table 7. Summary of One-Party Hypothesis Test Results Learning Outcomes

t_{count}	t_{tabel}
2,6332	1,6713

From the second hypothesis test at a significant level of 5% and degrees of freedom = 59, it can be seen that $t_{count} = 2{,}6332$ and $t_{table} = 1{,}6713$ so that $t_{count} > t_{table}$ This means that the TGT learning model is more effective than the direct learning model of the mathematics learning outcomes of students of class VIII in the odd semester of SMP Negeri 2 Tempel in the 2016/2017 school year.

RESULTS

Based on the results of the two-party hypothesis test for experimental class mathematics learning outcomes obtained t_{count}= 2,6332 and t_{table} = 2,00134 which means that there are significant differences between students whose learning uses the TGT model and students whose learning uses the direct learning model in class VIII students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year. While the results of the one-party hypothesis test for the learning outcomes of control class mathematics are obtained t_{count}= 2,6332 and t_{table} = 1,6713which means that learning mathematics using the TGT learning model is more effective than the direct learning model of mathematics learning outcomes for eighth-grade students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year. So for the second hypothesis test, it is obtained that $t_{count} > t_{table}$ then H_0 rejected and H_1 be accepted.

From the results of research conducted by researchers showed that learning using the TGT learning model is more effective than the direct learning model of student mathematics learning outcomes on the subject of factoring in algebra because students can be active with fun learning. In addition, students can also practice collaborating in learning, both individually and in groups.

The TGT learning model can increase the attitude of acceptance, positive interaction and collaboration with other different students. This learning model gives students more knowledge and skills, not only makes smart students more prominent in learning but students who have less academic ability can also participate actively and have an important role in their groups.

TGT learning models make students more enthusiastic in following the lessons because the lessons are packaged in an interesting and fun way with games and tournaments. While the direct learning model is considered to be less positive for learning outcomes because learning tends to be teacher-centered. Learning is less interesting and fun so that makes students less active in participating in learning. In this case, the TGT learning model has a positive impact on student mathematics learning outcomes.

CONCLUSION

Based on data analysis and discussion, the following conclusions can be drawn:

1. There is a significant difference between the learning outcomes of mathematics using the Teams Games Tournament learning model and those using the direct learning model of the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year. This is indicated by the two-party hypothesis test with a significant level of 5% and a degree of freedom 59, then the value obtained $\boldsymbol{t_{count}}$ = 2,6332 and $\boldsymbol{t_{table}}$ = 2,00134, means it $\boldsymbol{t_{count}}$>$\boldsymbol{t_{table}}$. So H_0 rejected and H_1 be accepted.
2. The Teams Games Tournament learning model is more effective than the direct learning model of the mathematics learning outcomes of Grade VIII students of SMP Negeri 2 Tempel, Sleman Regency in the odd semester of the 2016/2017 school year. This is indicated by the one-party hypothesis test where a significance level of 5% and a degree of freedom 59, the value obtained $\boldsymbol{t_{count}}$= 2,6332 and $\boldsymbol{t_{table}}$ = 1,6713, means it $\boldsymbol{t_{count}}$ >$\boldsymbol{t_{table}}$. So H_0 rejected and H_1 be accepted.

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